The Honest Truth about Conversational Programming

"Is conversational programming a necessary component of today's Manufacturing environment?"

Todd Drane, Marketing Manager at Fagor Automation, commented, "This is a fairly common question from many manufacturers. Most do not understand what Conversational programming is. Some associate Conversational Programming with simple processes ideal for the tool room only. But, I think the first thing we have to do is define what Conversational Programming is before we jump to that conclusion."

Conversational programming is an evolution of part-programming. It takes what is known and simplifies it for all users. The requirement to study the art of G-code programming is replaced by the need to be able to teach variables off a blueprint into a single screen on your CNC. The important thing is that Users do not need to be well versed in any particular brand of G-code programming. Therefore, in just an hour or two any operator can be taught how to program well in Conversational Programming.

Todd continued, "With our 8055 MC and TC controls for Milling and Turning respectively, directly from power-up, with no menu's to navigate, you can choose your desired Operation utilizing an ICON key. The ICON key simply has a picture of the operation on the keyboard. Choose the operation and the Conversational Graphic & Variable screen immediately pops-up."

Currently the Marketing Manager at Fagor Automation Corporation, Todd Drane has been working directly on a day to day basis with many of the Nation's top CNC Integrator firms. Todd has served roles that include Technical Services and Regional Sales Manager during his 25 year career and has been directly involved with hundreds of Machine Tool Retrofits with a special emphasis on CNC controls and the associated Servo/Motor Systems and Encoder Feedback products. Ensuring every application is equipped with the exact Technology necessary to achieve the goals of the Machinery has been the primary goal on every project. Todd is a graduate of the American College of Technology, enjoys a good cup of coffee, and identifies himself as a car guy.
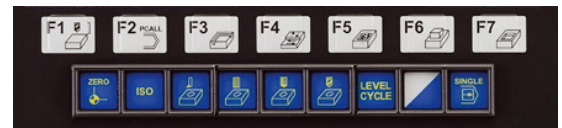

(Conversational ICON keys. Press the Operation and your Graphic screen appears)

The Conversational cycle Graphic and Variable screen to the right appears when the Pocket ICON key is pressed (F7) from the key picture above. The Graphic has all information the Operators blue print would contain. The pocket width, height, depth, etc. Therefore, the Operator simply keys through each variable that the CNC requires and fills in the blank right off the blueprint. In this case of a Rectangular pocket, it will also ask if the corners are chamfered, radiused or have a square corner and the radius of the corner, if necessary, as well as the Z axes penetration feedrate and the XY machining feedrate as well as the depth of each pass.
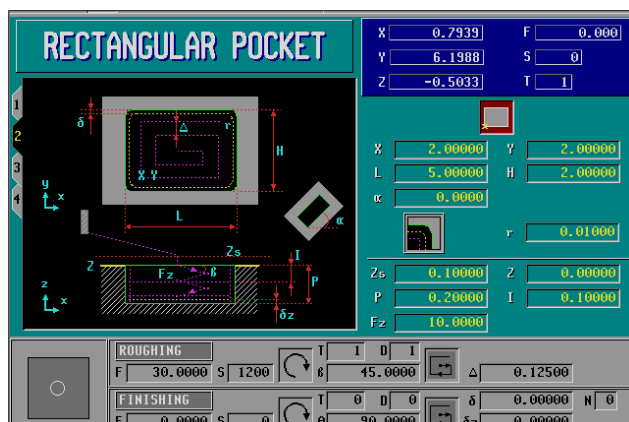

In addition, both Roughing and Finishing pass variables are programmed from this same screen including Feeds, Speeds, machining and spindle direction and Tool information. In other words, the entire cycle is programmed from start to completion from this single screen, no other menu hopping is necessary. In after just an hour of training, Operators can program complete cycles from start to finish in just 2-3 minutes.

Upon completion of the cycle, the Operator has a choice, they can execute the cycle as a one-shot operation or they can save to their Conversational program and begin programming the next operation. To execute as a one-shot cycle, they simply press the ESC key, which activates the cycle start key and then press the cycle start key. Many customers can start from a blank canvas, create the program and have the tool cutting the part in literally 3 minutes. Try that with a G-code program and cut operation.
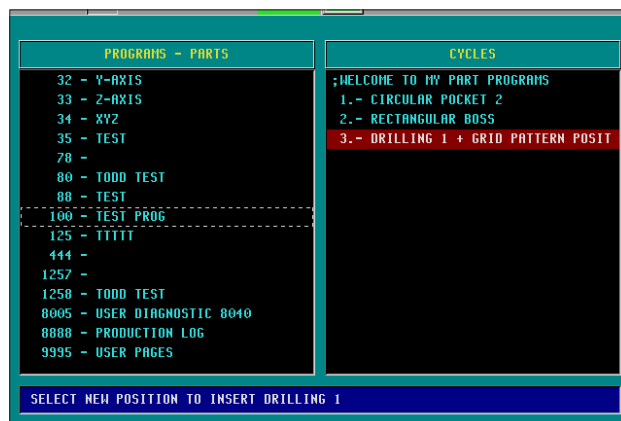

If the customer choses to save the cycle to a program, they simply press the "P.Prog" key, which opens the Part Program directory. The Operator simply presses Enter to save the cycle into the chosen program. Programs are saved in a sequence and can be easily and quickly Recalled and Edited or Deleted. The left side of the screen shows the existing programs and the right side shows the cycle operations within the highlighted program. You can scroll up and down to visually see what is contained in each program as you please. The cycle names are stored in the cycle, for this reason reading and understanding each program sequence is quick and easy. Simply highlight any operation and press the "Recall" key to edit.

Preparatory functions such as setting your Tool Offsets are accomplished in just seconds utilizing a conversational Tool Calibration screen that walks the Operator through the process. Upon completion, the offset is automatically written to the Operator defined offset number and can be called in all appropriate Conversational cycle screens. Tools can even belong to a family and given a nominal and actual life where when they reach the end of their life, the CNC has the ability to automatically change the tool to another tool within the same Family of tools.
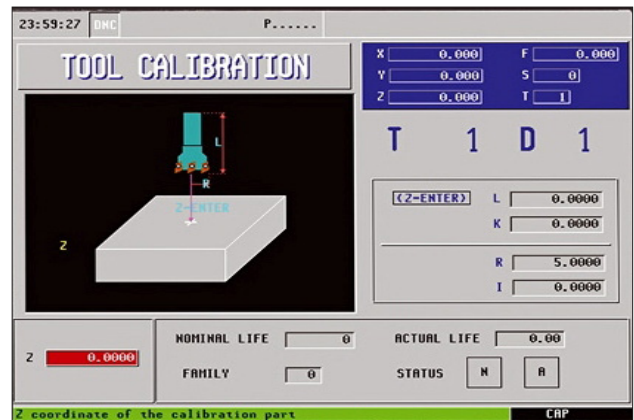

In addition, to create Profiles, the Fagor CNC has a built-in mini CAD/CAM system called the Profile Editor. The Profile Editor can be accessed within the Profiling cycle with a single key. It allows a multitude of profiles to be built graphically in only a matter of seconds. The created profiles can be inserted directly to the program being created or saved as a Subroutine and called from any program. Customers have reported very generous time savings with this feature considering trips to and from the CAD/CAM department are virtually eliminated.
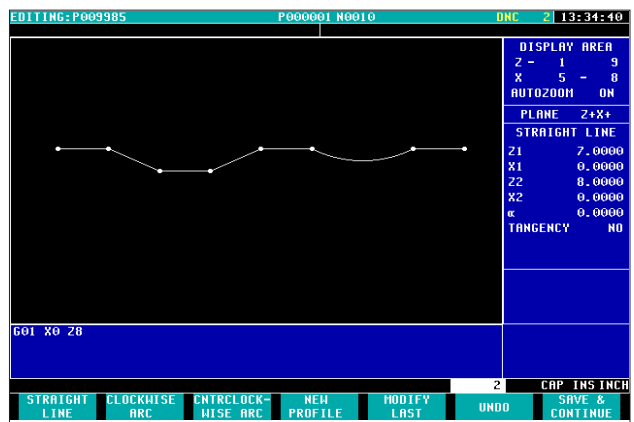
For those that prefer certain G-code functions, they have the ability to mix and match G-code within Conversational programming. The G-code commanded blocks simply become their own operation within the sequence of the Conversational Program.

Conversational Programming is not limited to simple pocket and drilling type operations. In addition, many advanced operations such as 3D Pockets and Profiling, Scaling and Pattern rotation can be quickly created with Conversational programming. Even Digitizing becomes a fast and easy operation to program.
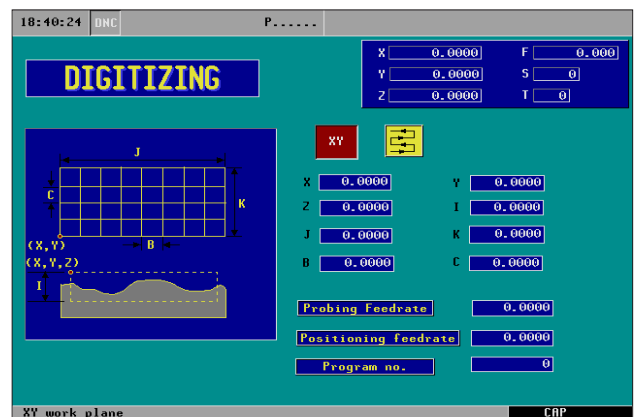
When Conversational Programming was first introduced, many were resistant and dismissed the technique as a novelty. Most of us were trained on G-code programming techniques and for the first year or two there was resistance to learning the technique. However, through time, it became a necessity to learn the Programming technique and it grew very quickly. Our 8055 MC and TC controls offer both G-code programming capability and Conversational programming on the same CNC, the Operator has the choice of which Operating system they utilize each time they turn on the CNC (You may toggle between the 2 systems whenever you desire). After a while, you may automatically access the Conversational programming method versus the G-code simply because of the ease found with it. You cannot deny, it is easier, faster and dramatically less keys have to be pushed to accomplish the same program. Furthermore, Conversational programming is easier on your memory, which allows programming with more confidence. Conversational programming doesn't require you have past programming knowledge or capabilities, instead it asks you the questions that have to be asked for every operation.
It is impossible to neglect to program a portion of a cycle, it will automatically prompt you through it. At the end of the day, you can turn your entire workforce into Programmers within just a few short hours with Conversational Programming. Ask yourself if you can do the same with a G-code programming system.

The conclusion is fairly simple, if Shop Floor Programming is a part of your Manufacturing process on any level, you want a friendly Conversational programming system. You will thank us later. In three words: Simple Yet Powerful.

So what are the benefits of conversational programming?

- *The ability to broaden the range of personnel you have that can program and operate the CNC Machine Tool.*

- *Set-up time and Programming time is significantly reduced and simplified and program editing is made easy considering all you have to do is recall the cycle and change the variable to modify or fix your part-program.*

- *Additionally, the program itself is easier to read considering it is sequenced based upon Cycle events.*

- *Any user can easily go back and edit a program, even if another user not available, had created it.*

- *There is no G-code to decipher, simply recall the cycle and adjust the variable.*

- *Scrap material is dramatically reduced considering all pertinent questions are asked.*

- *Basic Machining skills are sufficient to run a CNC Machine.*

For more information:
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